

Appl. No. 10/618,284  
Amdt. dated August 8, 2006  
Reply to Office Action of April 10, 2006

PATENT

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method for simulating a system which comprises a software element, and first and second hardware components, the software element being for execution on the second hardware component, and the first and second hardware components being operable to interact with one another, the method comprising the steps of:

simulating operation of the first hardware component in a first simulation in a hardware environment; and

simulating the software element and the second hardware component in a second simulation using a software model;

wherein the first simulation and the second simulation are implemented in separate processing threads, and

wherein the first and second simulation run asynchronously, the second simulation running ahead of the first simulation allowing for more rapid simulation of software instructions in the software model.

2. (Canceled)

3. (Currently Amended) A method as claimed in claim 1, wherein a number of clock cycles of the first simulation and the second simulation are is synchronised with a reference clock.

4. (Original) A method as claimed in claim 1, wherein the first and second simulations run in different respective simulation environments.

5. (Original) A method as claimed in claim 1, further comprising:

Appl. No. 10/618,284  
Amdt. dated August 8, 2006  
Reply to Office Action of April 10, 2006

PATENT

performing operations in the first simulation to set up an inter-process communications protocol connection therein;  
connecting the second simulation to the inter-process communications protocol connection in the first simulation;  
connecting a software debugger to the second simulation; and  
controlling the first simulation from the software debugger via the second simulation using the inter-process communications protocol.

6. (Original) A method as claimed in claim 1, further comprising:  
performing operations in the first simulation to set up an inter-process communications protocol connection therein;  
connecting a software debugger to the communications protocol connection; and  
controlling the first simulation from the software debugger using the inter-process communications protocol.

7. (Original) A method as claimed in claim 5 or 6, wherein the inter-process communications protocol is TCP/IP and the connection is a TCP/IP socket.

8. (Original) A method as claimed claim 1, wherein the second hardware component includes a processor.

9. (Original) A method as claimed in claim 8, wherein the processor is an embedded processor.

10. (Original) A method as claimed in claim 1, wherein the hardware component includes processor peripheral devices.

11. (Original) A method as claimed in claim 10, wherein the peripheral devices are embedded.

Appl. No. 10/618,284  
Amdt. dated August 8, 2006  
Reply to Office Action of April 10, 2006

PATENT

12. (Original) A method as claimed in claim 1, wherein the first simulation is implemented using a hardware description language (HDL) simulation environment.

13. (Original) A method as claimed in claim 1, wherein the second simulation is implemented using a C model.

14. (Original) A method as claimed in claim 1, wherein the first hardware component is a programmable logic device.

15. (Currently Amended) A method for controlling a simulation of a system using a software debugger, wherein the system comprises a software element, and first and second hardware components; the software element being for execution on the second hardware component and the first and second hardware components being operable to interact with one another, the method comprising the steps of:

simulating the first hardware component in a first simulation; ~~and~~

simulating the software element and the second hardware component in a second simulation using a software model;

performing operations ~~in the first simulation~~ to set up an inter-process communications protocol connection; ~~and~~

connecting the software debugger to the software model of the second simulation;

and

controlling the first simulation from the software debugger through the software model of the second simulation using the inter-process communications protocol, the software debugger having no knowledge of the connection between the first and second simulations.

16. (Original) A method as claimed in claim 15, further comprising the step of:

connecting the software debugger to inter-process communications protocol connection.

Appl. No. 10/618,284  
Amdt. dated August 8, 2006  
Reply to Office Action of April 10, 2006

PATENT

17. (Canceled)
18. (Original) A method as claimed in claim 15, wherein the inter-process communications protocol is TCP/IP and the connection is a TCP/IP socket.
19. (Original) A method as claimed in claim 15, wherein the step of simulating the second hardware component comprises simulating a processor and one or more peripheral devices with which the one or more processors interact directly.
20. (Original) A method as claimed in claim 15, wherein the first simulation and the second simulation are implemented in separate processing threads.
21. (Original) A method as claimed in claim 15, wherein the first simulation and the second simulation run asynchronously.
22. (Original) A method as claimed in claim 15, wherein the first simulation and the second simulation are synchronised with a reference clock.
23. (Original) A method as claimed in claim 15 wherein the first and second simulations are implemented in respective different simulation environments.
24. (Original) A method as claimed in claim 15, wherein the second hardware component includes embedded processors.
25. (Original) A method as claimed in claim 15, wherein the second hardware component includes embedded peripheral devices.
26. (Original) A method as claimed in claim 15, wherein the first simulation is implemented using a hardware description language (HDL) simulation environment.
27. (Original) A method as claimed in claim 15, wherein the second simulation is implemented using a C model.

Appl. No. 10/618,284  
Amdt. dated August 8, 2006  
Reply to Office Action of April 10, 2006

PATENT

28. (Original) A method as claimed in claim 15, wherein the first hardware component is a programmable logic device.

29. (Currently Amended) A method for providing an I/O interface for a simulation model to allow the simulation of interactive programs, the method comprising:  
simulating a software element using a software model in a first processing thread;  
simulating an embedded input/output device within the simulation model to produce an input/output device model in a second processing thread;  
connecting the input/output device model to a terminal emulator using an inter-process communications protocol; ~~and~~  
running an interactive program in the terminal emulator to transfer information to the input/output device model; and  
polling the input/output device model for the transferred information using the software model.

30. (Original) A method as claimed in claim 29, the method further comprising:  
providing separate processing threads for the embedded input/output device to allow concurrent user inputs and outputs.

31. (Original) A method as claimed in claim 29, wherein the inter-process communications protocol is TCP/IP.

32. (Original) A method as claimed in claim 29, wherein the input/output device is a UART device.

33. (Original) A method as claimed in claim 29, wherein the input/output device is an Ethernet MAC device.